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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM:

Chief, R&D-EP

NO.

DATE

12 July 1956

TO: (Officer designation, room number, and building)

DATE

REC'D

FWD'D

OFFICER'S
INITIALS

COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)

1.

Chief, R&D/Lab

2.

CR

3.

Design

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

JMS

CK

MR

JGJ

Joe: Apparently concerns some of the equipment intended for use will you receive. - Passed for info & file /mr.

4-3 The figure of 200 ma is somewhat high. I told [] when I was queried that 100 ma. was the max that could be obtained JGJ

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The Files

12 July 1956

[REDACTED]

Trip and Progress Report, Contract RD-116, T.O. 1

1. On 27 June 1956, in company with [REDACTED] I visited the plant of [REDACTED] for the purpose of becoming acquainted with this task and of observing progress of the contractor. Those persons contacted at [REDACTED] were:

[REDACTED]

2. Inasmuch as I have just recently assigned this task, one purpose of this visit was to become acquainted with the objectives and with the [REDACTED] people who are handling this task. The entire group met in [REDACTED] office, where a review of the entire program ensued. Specific points were brought up, of which life expectancy of the batteries was discussed and means to increase that life were mentioned. [REDACTED] delivered a BR402/11 silvercell, and I described a miniature hand crank generator which could possibly be used for recharging these cells. We also discussed the possibility of using solar cells to maintain some of the life of these batteries, although it was pointed out that the charge rate is quite low. Our own laboratory has been queried on this point; they say at 6 volts a total charging current of approximately 200 milliamps can be expected under normal sunlight conditions.

3. [REDACTED] drew a block diagram of the anticipated system and indicated the various points which are getting highest priority at the present time. The two items on which they are concentrating are the continuous tuning mechanism of the local oscillator. Experiments indicate that the tuning range of from [REDACTED] will be possible in one continuous band. Although a number of systems have been tried, the results are not yet conclusive enough to indicate which particular system will be used, although indications point toward the use of a shorted parallel resonant line with a motor driven sliding contact.

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The recorder activity has gone along two directions. [redacted] producers of miniature battery-powered tape recorders, have been approached and altered one of their basic mechanisms to operate at 30 inches per second. This is a small electric motor-driven unit, utilizing a mechanical governor. The total weight of the system is 3 1/2 pounds, exclusive of the battery. As a second approach, the [redacted] have been requested to investigate recorders and to deliver one capable of meeting these requirements. Examination of the [redacted] unit raised several questions. I was somewhat dubious of the ability of the [redacted] unit to meet low temperature operating specifications because of the grease in the drive mechanism for the mechanical governor, plus the fact that the oil wetted felt pads on this governor would harden at low temperatures. I suggested the removal of the mechanical governor in its entirety and the substitution of a precision DC motor. [redacted] indicated that he had discussed this point with [redacted] but they found that no motor was suitable for the job. I pointed out that precision DC motors cost between \$100.00 and \$200.00 each, and that incorporation of such units would have priced this item completely out of the market so far as [redacted] is concerned. Therefore, they had sought less expensive means of maintaining speed, and further they were not concerned with low temperature operation. [redacted] indicated his desire to investigate these speed controlled motors.

4. The question of packaging of the units was also raised. Earlier indication had been that the only restriction was 60 pounds in three packages with specific dimensions not critical. In looking over the specifications for the magnetic tape recorder as asked of the [redacted] it was noted that the dimensions called for 9 by 9 by 16 inches. The previous discussions with [redacted] of SPD has indicated that [redacted] are going to be used to house this equipment. On this basis, an arbitrary dimension of 20 by 15 by 5 has been arrived at, although the [redacted] are not available. These dimension limits were given to [redacted] who expressed some concern about being able to meet the 5-inch maximum. It is believed that the tape recorder will present no problem, although shielding around the local oscillator for the receiver may be extremely difficult to compress into this size.

5. [redacted] has contacted the [redacted] to investigate an IF amplifier for use in this system. This amplifier should have a center frequency of 1 megacycle with a band pass of approximately 200 kilocycles. A ball park figure from [redacted] indicates that they will ask approximately \$75,000.00 for developing this unit. The [redacted] attitude is that they will develop their own if [redacted] is going to ask this much. [redacted] has no surface barrier transistors, and with a delivery time of approximately 30 days from the supplier, we agreed to loan several units to [redacted] to facilitate their experiments. These will be repaid to us at a later date.

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OC-E/R&D-EF/FCS:mjr (12 July 1956)

cc: R&D Subject File

R&D Lab

Dev-ep